EXHIBIT H

CURRICULUM VITAE
Marcin S. Filutowicz

BACKGROUND INFORMATION
Place and date of birth: Bydgoczcz, Poland (10/14/1950)
Nationality: USA
Married to Hanna Filutowicz (de domo Zuchowska), one son Mateusz (1977)

FORMAL EDUCATION
Ph.D., Polish Academy of Sciences, Warsaw, Poland 1979
Institute of Biochemistry and Biophysics

Thesis: Identification of independent targets of sodium azide and the mechanisms of resistance to its action in *Salmonella typhimurium*
Research advisor: Professor Tadeusz Klopotowski.

M.S. University of Warsaw, Warsaw, Poland 1975
Institute of Biochemistry and Biophysics

POSITIONS HELD
2000-present - I am a co-founder, president and director at ConjuGon, Inc., a biotech company based in Madison, WI. The company's technology platform has originated in my University of Wisconsin laboratory.

1997- present: Professor of Bacteriology, Department of Bacteriology, University of Wisconsin, Madison

1993 -1997: Associate Professor, Department of Bacteriology, University of Wisconsin, Madison

1987-1993: Assistant Professor, Department of Bacteriology, University of Wisconsin, Madison

1985-1987: Assistant Research Biologist, Department of Biology, University of California, San Diego

1981-1985: Postgraduate Research Biologist, Department of Biology, University of California, San Diego

1975-1981: Graduate student, Polish Academy of Sciences, Institute of Biochemistry and Biophysic

MEMBERSHIPS
American Society for Microbiology
American Association for the Advancement of Science

HONORS

EMBO Predoctoral Trainee fellowship (Pavia Italy, 1977)
Hilldale Undergraduate/Faculty Research Fellowship (1991)

RESEARCH SUPPORT

NCS: (10/1/88-9/30/89). The Structure of DNA Helix in the Binding Targets for Replication Initiator Protein pi. $6,000 total cost. In house grant IN-35-30-24.

NIH: (08/01/99-07/31/03). Role of Nucleoprotein Structures in Genome Duplication. $1,547,867 total cost. No cost extension granted.

Hatch "Trojan Horse in the orchard: A novel strategy to combat *Erwinia amylovora*, the fire blight pathogen $235,127 total cost (2002-2004).

Hatch funding "The Trojan horse and the gypsy moth: harnessing killer plasmids for targeted study of microbial communities. $168,799 (2002-2004).

submitted to NIH on October 1 2003 ; Conjugation-based antibacterial agents(850, 000 direct cost).

NIH Competitive reneval "Role of Nucleoprotein Structures in Genome Duplication. $1,200,867 direct cost.

UW Life Cycle Research Grant Program. No title. This is an in-house program for UW faculty needing help in sustaining their research program. $42,914 insurance salary money for S. Rakowski, a senior research specialist in my laboratory.

UW - Madison Hatch: (10/01/88-09/30/93). Identification and Molecular Analysis of Functional Domains of the Replication of Protein pi. $72,800 total costs (WIS3196).

HATCH (10/01/94- 9/30/98. Role of transcription in activation of R6K origin. $97,524 Direct cost.

OTHERS

I am serving on the Ph.D. committees of circa 30 students from Bacteriology, Biochemistry, Genetics and Cell and Molecular Biology programs.

Ad hoc reviewer for NSF, NIH, US Army.

Ad hoc reviewer for Journal of Bacteriology, Gene, Journal Molecular Biology, Nucleic Acids Research, Plasmid, Proceedings of the National Academy of Sciences, Molecular Microbiology, Nature, Science.

RESEARCH INTERESTS

Research Focus

Research on the biology of bacterial plasmids has made many extraordinary contributions to basic science. One of those contributions was the development of the concept of a self-controlling replication unit known as the replicon model. It is now clear that the duplication and maintenance of replicons is governed by a diverse repertoire of control mechanisms. One of the primary tenets of the model, however, remains unchallenged - that replication is regulated at the stage of initiation. Thus, initiation launches the elongation phase of DNA synthesis that is, itself, unregulated.

An extraordinary effort has been made to isolate replication origins (oris) from diverse sources to study the replication control mechanisms. From viruses to humans, the recognition of an ori by specific initiator proteins is a recurring theme of these studies. Initiator proteins bind to reiterated sequences called iterons and recruit other initiation participants through the use of high precision protein-DNA and protein-protein interactions. Our laboratory has focused its investigations on the initiation event at one of three origins present in plasmid R6K. This plasmid confers, on host bacteria, resistance to streptomycin and penicillin. We have chosen gamma ori because it appeared simple enough for addressing the following fundamental questions:

* What elements distinguish the ori replicon from the rest of the cellular DNA?
* How is replication of an iteron-containing replicon regulated?
* How is the replication fork assembled and launched?
* What elements determine the stability of a replicon?

Our laboratory has provided answers to some of those questions. In addition, since gamma ori shares many similarities with the origins of other prokaryotic and eukaryotic replicons, our studies have implications for the general understanding of the processes of regulated DNA replication (reviewed by Filutowicz et al., Filutowicz and Rakowsk, Kruger et al., 2004, see publications below).

Of particular concern is the development of antibiotic-resistant strains of bacterial pathogens that seriously compromise the treatment of infectious diseases. In essence, this is due to the extraordinary genetic flexibility of bacteria and their plasmids, a factor that continues to challenge microbiologists. Numerous studies have shown that resistance arises either directly, by mutant selection, or by acquisition via horizontal transfer of highly evolved, resistance genes. The continuously evolving association of resistance genes with plasmids, transposons and integrons has greatly facilitated their dissemination.

Because of the many applications of antibiotics in modern world, it is highly unlikely that methods will be developed which completely avoid the selection of resistant strains. In cases involving certain resistance transposons, exposure to antibiotics actually induces replicative transposition. This means, for example, that the administration of "sub-therapeutic" concentrations of antibiotics to

humans for treatment of acne, to livestock to promote feed efficiency, and to orchards to control phytopathogens may not only select for maintenance of antibiotic-resistance genes acquired by new recipients, but may also enhance the transfer of these genes as well. It is clear that we must use our current arsenal of antibiotics much more prudently...

see websites:
http://www.healthsci.tufts.edu/apua/apua.html
http://www.planthealthprogress.org/current/reviews/antibiotic/top.htm

...but it is also important that we devise radically different antibacterial technologies that will reduce the uses of chemical antibiotics. See website: http://www.cdc.gov/drugresistance/actionplan

We have set out to develop novel approaches for combating unwanted bacteria by destroying their ability to carry out essential cell functions (WARF filed patent P00154US/F093). It is our goal to provide safe yet powerful tools to combat the rising tide of antibiotic-resistant bacteria, organisms that currently pose substantial risks to humans all over the world.

Publications

1) Wild, J., M. Filutowicz, and T. Klopotowski. 1978. Utilization of D-amino acids by *dad*R mutants of *Salmonella typhimurium*. Arch. Microbiol. 118:71-77.

2) Ciesla, Z. and M. Filutowicz. 1979. Azide mutagenesis in Gram-negative bacteria: Reversion of the mutagenic effect by L-cysteine. Mutat. Res. 66:301-305.

3) Stepien, E., M. Filutowicz, and M. Fikus. 1979. Effect of temperature and 4,6-diamidine two phenylindole on restriction of supercoiled ColE1 DNA by EcoRI endonuclease. Acta Biochim. Polon. 26:29-37.

4) Filutowicz, M., Z. Ciesla, and T. Klopotowski. 1979. Interference of sodium azide with cysteine biosynthesis in *Salmonella typhimurium*. J. Gen. Microbiol. 113:45-55.

5) Ciesla, Z., M. Filutowicz, and T. Klopotowski. 1980. Involvement of L-cysteine biosynthetic pathway in azide-induced mutagenesis in *Salmonella typhimurium* and *Escherichia coli*. Mutat. Res. 70:261-268.

6) Filutowicz, M. 1980. Requirement of DNA gyrase for the initiation of chromosome replication in *Escherichia coli* K12. Mol. Gen. Genet. 177:301-309.

7) Filutowicz, M. and P. Jonczyk. 1981. Essential role of the *gyr*B gene product in the transcriptional event coupled to the *dna*A-dependent initiation of *Escherichia coli* chromosome replication. Mol. Gen. Genet. 183:134-138.

8) Filutowicz, M., A. Wiater, and D. Hulanicka. 1982. Delayed inducibility of sulphite reductase in *cys*M mutants of *Salmonella typhimurium* under anaerobic conditions. J. Gen. Microbiol. 128:1791-1794.

9) Wiater, A., M. Filutowicz, and D. Hulanicka. 1982. A new class of mutants in the *cys*B regulatory gene for cysteine biosynthesis in *Salmonella typhimurium*. J. Gen. Microbiol. 128:1785-1790.

10) Filutowicz, M. and P. Jonczyk. 1983. The *gyr*B gene product functions in both initiation and chain polymerization of *Escherichia coli* chromosome replication; Suppression of the initiation deficiency in *gyr*B-Ts mutants by a class of *rpo*B mutations. Mol. Gen. Genet. 191:282-287.

11) Schmidhauser, T., M. Filutowicz, and D.R. Helinski. 1983. Replication of derivatives of the broad-host range plasmid RK2 in two distantly related bacteria. Plasmid 9:325-330.

12) Stalker, D., M. Filutowicz, and D.R. Helinski. 1983. Release of initiation control by a mutation in plasmid-encoded pi protein required for R6K DNA replication. Proc. Natl. Acad. Sci. USA 80:5500-5505.

13)Filutowicz, M., G. Davis, A. Greener, and D.R. Helinski. 1985. Autorepressor properties of the pi-initiation protein encoded by plasmid R6K Nucl. Acid Res. 13:103-114.

14)McEachern, M.J., M. Filutowicz, and D.R. Helinski. 1985. Mutations in direct repeat sequences and in a conserved sequence adjacent to the repeats result in a defective replication origin in plasmid R6K. Proc. Natl. Acad. Sci. USA 82:1480-1484.

15)Filutowicz, M., M.J. McEachern, A. Greener, P. Mukhopadhyay, E. Uhlenhopp, R. Durland, and D.R. Helinski. 1985. Role of the pi initiation protein and direct nucleotide repeats in the regulation of plasmid R6K replication. IN: Plasmids in Bacteria, ed. D.R. Helinski et al. Plenum Press, New York pp. 125-140.

16)Filutowicz, M., E. Uhlenhopp, and D.R. Helinski. 1986. Binding of purified wild-type and mutant pi initiation proteins to a replication origin region of plasmid R6K. J. Mol. Biol. 187:225-239.

17)Mukhopadhyay, P., M. Filutowicz, and D.R. Helinski. 1986. Replication from one of the three origins of plasmid R6K requires coupled expression of two plasmid-encoded proteins. J. Biol. Chem. 261:9534-9539.

18)Saraswat, L.D., M. Filutowicz, and S.S. Taylor. 1986. Expression of the type I regulatory subunit of cAMP-dependent protein kinase in *Escherichia coli*. J. Biol. Chem. 261:11091-11096.

19)Filutowicz, M., M.J. McEachern, and D.R. Helinski. 1986. Positive and negative roles of an initiator protein at an origin of replication. Proc. Natl. Acad. Sci. USA 83:9645-9649.

20)Filutowicz, M. and K. Appelt. 1988. The integration factor of *Escherichia coli* is essential for replication of R6K gamma origin and binds the origin sequence *in vitro*. Nucl. Acids Res. 16:3829-3843.

21)Filutowicz, M., and J. Roll. 1990. The requirement of IHF protein for extrachromosomal replication of the *Escherichia coli oriC* in a mutant deficient in DNA polymerase I activity. New Biologist. 2:818-827.

22)Greener, A., M. Filutowicz, M.J. McEachern and D.R. Helinski. 1990. N-terminal truncated forms of the bifunctional pi initiation protein express negative activity on plasmid R6K replication. Mol. Gen. Genet. 224:24-32.

23)Dellis, S., and M. Filutowicz. 1991. Integration Host Factor of *Escherichia coli* reverses the inhibition of R6K plasmid replication by pi initiator protein. J. Bact. 173:1279-1286.

24)Filutowicz, M., and R.B. Inman. 1991. A compact nucleoprotein structure is produced by binding of *Escherichia coli* Integration Host Factor to the replication origin of plasmid R6K. J. Biol. Chem. 266:24077-24083.

25)Filutowicz, M., W. Ross, J. Wild, and R. Gourse. 1992. Involvement of Fis protein in replication of the *Escherichia coli* chromosome. J. Bacteriol. 174:398-407.

26)Wu, F., I. Goldberg, and M. Filutowicz. 1992. Roles of a 106-bp origin enhancer and *Escherichia coli* DnaA protein in replication of plasmid R6K. Nucl. Acids Res. 20:811-817.

27)York, D., V. Ivanov, J. Gan, and M. Filutowicz. 1992. Translational options for the *pir* gene of plasmid R6K: multiple forms of the replication protein pi. Gene. 16:7-12.

28)Mukerji, P., A. Greener, and M. Filutowicz. 1992. Identification of a novel promoter in the replication region of plasmid R6K. J. Bacteriology. 174:4777-4782.

29)Dellis, S., T. Schatz, K. Rutlin, R. B. Inman and M. Filutowicz. 1992. Two alternative structures can be formed by IHF protein binding to the plasmid R6K gamma origin. J. Biol. Chem. 267; 24426-24432.

30)York, D. and M. Filutowicz. 1993. Autoregulation-deficient mutant of the plasmid R6K-encoded pi protein distinguishes between palindromic and non-palindromic binding sites. J. Biol. Chem. 268; 21854-21861.

31)Levchenko. I., D. York and M. Filutowicz 1994 The dimerization domain of R6K plasmid replication initiator protein pi revealed by analysis of a truncated protein. Gene 145; 65-68.

32)Filutowicz. M. H. Grimek and K. Appelt 1994. Purification of the *Escherichia coli* integration Host factor (IHF) in one chromatographic step. Gene 147; 149-150.

33)Posfai. G., M. Koop., Z. Hradecna., N. Hasan ., M. Filutowicz and W. Szybalski 1994. In vivo excision and amplification of large segments of the Escherichia coli genome. Nucleic Acids Res. 22; 2392-2398.

34)Filutowicz, M., D. York and I. Levchenko 1994 Cooperative binding of initiator protein to replication origin conferred by single amino acid substitution. Nucleic Acids Res. 22; 4211-4215.

35)Wu, F., I. Levchenko and M. Filutowicz 1994. Binding of DnaA protein to a replication enhancer counteracts the inhibition of plasmid R6K □ origin

replication mediated by elevated levels of R6K pi protein. J. Bacteriol. 176; 6795-6801.

36)Wu, F., I. Levchenko and M. Filutowicz. (1995) A DNA segment conferring stable maintenance on R6K gamma origin core replicons. J. Bacteriol. 177, 6338-6345.

37)Urh. M., Y. Flashner, A., Shafferman and M. Filutowicz. (1995) Altered (Copy-Up) forms of initiator protein pi suppress the point mutations inactivating the gamma origin of R6K. J. Bacteriol. 177, 6732-6739.

38)Urh, M., D. York and M. Filutowicz. (1995) Buffer composition mediates a switch between cooperative and independent binding to DNA of an initiator protein. Gene 164, 1-7.

39)Dellis, S., J. Feng., and M. Filutowicz (1996) Replication R6K gamma origin *in vivo* and *in vitro*: Dependence on IHF binding to *ihf1* site J. Mol. Biol. 257, 550-560.

40)Levchenko and M. Filutowicz. (1996) Initiator protein pi can bind independently to two domains of the gamma origin core of plasmid R6K: the direct repeats and the A+T-rich segment. Nucleic Acids Res. 24. 1936-1942.

41)Wu. F., J. Wu J. Ehley, and M. Filutowicz. 1996. Preponderance of Fis-binding sites in the R6K g origin and the curious effect of the penicillin-resistance marker on the replication properties of this origin in the absence of Fis. J. Bacteriol. 178:4965-4974.

42) Levchenko, I., R. B. Inman and M. Filutowicz (1997). Replication of the R6K gamma origin *in vitro*: dependence on wt pi and hyperactive piS87N protein variant. Gene 193: 97-103.

43) Wu, J., M. Sektas., D. Chen and M. Filutowicz (1997). Two forms of replication initiator protein: Positive and negative controls Proc. Natl. Acad. Sci. USA 94:13967-13972.

44) Chen, D,. J. Feng, R. Kruger. M. Urh, R.B. Inman and Marcin Filutowicz (1998) Replication of R6K gamma origin in vitro: discrete start sites for DNA synthesis dependent on pi and its copy-up variants. J. Mol. Biol. 282: 775-787.

45) Urh, M., J. Wu., K. Forest, R B. Inman, and M. Filutowicz. (1998). Assemblies of replication initiator protein on symmetric and asymmetric DNA sequences depend on multiple protein surfaces J. Mol. Biol. 283:619-631.

46) Anna Pluciennik, R., R. Iyir, Marek Napierala., Jacquelyn, E., Larson, Marcin Filutowicz and Robert, D. Wells, (2002) Long CTG-CAG repeats from myotonic dydtrophy are preferred sites for intermolecular recombination J. Biol. Chem., 277. 34074-34086.

47)Wu J, Filutowicz M. Hexahistidine (His_6)-tag dependent protein dimerization: A cautionary tale. Acta Biochem. Polon. 1999; 46:591-599.

48)Krüger R, Filutowicz M. Dimers of pi protein bind the A+T-rich region of the R6K g origin near the Leading Strand Start Sites: Regulatory Implications. J. Bacteriol. 2000; 182:2461-2467.

49)Krüger R, Konieczny, Filutowicz M. Monomer/dimer ratios of replication protein modulate the DNA strand-opening in a replication origin. J. Mol. Biol. 2001; 306:945-955.

50)Krüger, R., and M. Filutowicz (2003) pi protein and ATP-dependent transitions from "closed" to "open" complexes at the gamma *ori* of plasmid R6K. Nucleic Acids Res. 31:5993-6003.

51)Krüger, R., and M. Filutowicz (2003) Characterization of His-tagged, R6K-encoded pi protein variants. Plasmid 50; 80-85.

INVITED REVIEW PAPERS

1) Filutowicz, M. 1980. Plasmids. In: Molecular Biology-Gene Engineering, ed. Z. Lassota. pp. 377-405.

2) McEachern, M.J., M. Filutowicz, S. Yang, A. Greener, P. Mukhopadhyay, and D.R. Helinski. 1986. Elements involved in the copy number regulation of the antibiotic resistance plasmid R6K IN: Banbury Conference on Evolution and Environmental Spread of Antibiotic Resistance Genes. Cold Spring Harbor Press, pp 195-207.

3) Filutowicz, M., M.J. McEachern, P. Mukhopadhyay, A. Greener, S. Yang, and D.R. Helinski. 1986. DNA and protein interactions in the regulation of plasmid replication. The Seventh John Innes Symposium on Virus Replication and Genome Interactions, pp. 15-31.

4) Saraswat, L.D., M. Filutowicz, and S. Taylor. Expression and mutagenesis of the regulatory subunit of cAMP-dependent protein kinase in *E. coli*.: Methods in Enzymology, eds. S.P. Colowick and N.O. Kaplan, Academic Press, New York.

5) Filutowicz, M., S. Dellis, I. Levchenko, M. Urh, F. Wu and D. York. 1994. Regulation of Replication of an iteron-containing DNA molecule. Progress in Nucleic Acids and Molecular Biology. Eds. K. Moldave H. Cohn 48; 239-273.

6) Filutowicz, M. and S. A. Rakowski (1998). Regulatory Implications of Protein assemblies at the gamma ori of Plasmid R6K. Gene 223: 195-204.

7) Forest, K. T., and M. Filutowicz. (2003) Remodeling of replication initiator proteins. Nature Structural Biology 10; 496-498.

8) Krüger R, Rakowski SA, Filutowicz (scheduled for April 2004) M. Participating elements in the replication of iteron-containing plasmids (ICPs) In: *Plasmids Biology* (eds. Funnell B, Phillips G.) ASM Press, Washington D. C. In press.

SELECTED RESEARCH PRESENTATIONS (SINCE 1995)

ASM Annual Meeting
University of California, Berkeley, Dept. of Molecular Biology
College of Physicians and Surgeons of Columbia University, Dept. of Microbiology
National Institutes of Health
Texas Medical Center School of Medicine, Dept. of Microbiology
University of Wisconsin, Dept. of Bacteriology
Harvard Medical School, Dept. of Microbiology
K.B. Raper Symposium, University of Wisconsin, Dept. of Bacteriology
National Cancer Institute, Frederick Cancer Research Facility
National Institutes of Health, Bethesda
University of California, San Diego
Agouron Institute, La Jolla CA
Polish Academy of Sciences, Warsaw
Max-Planck-Institut für Moleculare Genetik
EMBO Workshop on Priomiscouous plasmids Lake Tahoe
Genetics Colloquium UW-Madison
Regulatory Mechanisms of DNA Replication, Les Arcs, France
Prokaryotic Chromosomes: Structure and Function in Genome Design: Panama City Beach, Florida
National Institutes of Health, Bethesda
Fredrick Cancer Research
University of Texas at Austin, Austin Spring Meeting
EMBO Workshop on Promiscuous Plasmids, Las Navas del Marques, Spain
Plasmid Biology, Banff, Canada
Institute of Biochemistry and Biophysics, Polish Acadamy of Sciences, Warsaw, Poland
Biotechnology School. Department of Biotechnology, University of Gdansk, Poland
Department of Biology, University of Laiden, Laiden, Netherland
Gene Flow of Antibiotic Resistance in Bacteria, CALS Madison
Scrips La Jolla
UCSD La Jolla
Department of Bacteriology Madison
Northern Illinois University DeKalb
Plasmid Biology, Merida, Mexico
Max-Planck, Berlin
Faculty of Biotechnology, University of Warsaw, Poland

MENTOR TEACHING
High School mentoring
Katarzyna Skrzypczynska

Undergraduate mentoring - present positions
Ilya Goldberg- postdoc Harvard
Kuo-Yuan Hwa- Researcher, Taipei Taiwan
Todd Schatz- Vet.School Madison
Mike Berger- grad student, UW Green Bay
Kay Rutlin- Grad student Pittsburgh
Cheryl Vaughan - Grad student Harvard Chemistry
Kristin Pederson- Postdoc Boulder, Co
Anderson Brad - Medical School, Milwaukee
Arroyo, Adeyma- Panama
Daniels, Gwynn - Grad student Oregon, Portland
Ganguli, Suvranu- Med. School, Chicago
Huspen Rick- Med School
Jicinsky, Tim- unknown
Janumapali Sridevi-unknown
Lasch, Craig-unknown
Pietz Brad- Grad Student, UW Madison
Rothblum, Sam- unknown
Ulbrich, Sandra- -unknown
Doug Newton- grad student, Yale
Jennifer vanAsten
Eric Willkinson
Ryan Maus
Soraya Chaturongakul
Sara Snyder.

Masters Students
Dona York
Frank Wu
Dongzhao Chen
Jiazhen Wu
Janyu Peng
Zomary Flores
Kathy LaPoint

Research Specialsts
Baskfield Julie
Ebert Jerry
Schaeffer Lori
Sheryl Rakowski
Andrea Dudding
Selvi Kunnimalayiaan-

Ph.D. Students
Stephanie Dellis
Dona York
Frank Wu
Marjeta Urh
Ricardo Kruger
Lisa Bowers

Post-doctoral trainees
Dr. Jacek Gan
Dr. Igor Levchenko
Dr. Jin Feng
Dr. Stephanie Dellis
Dr. Marjeta Urh

Senior Scientists
Dr. Jadwiga Wild
Dr. Agata czyz

CLASSROOM TEACHING

Courses taught at the University of Wisconsin-Madison

The undergraduate curriculum in the Department of Bacteriology included a strong bacterial genetics component until 1985. Genetics was not taught after 1985 for lack of staff. After one year of teaching relief, I developed a 15 lecture genetics course which was incorporated into Bacteriology 526 (Physiology of Microorganisms). I taught this part for three years. This, however, has not proven to be a satisfactory solution for several reasons. First, Bacteriology 526 is not taken until the senior year, although students actually need a fundamental understanding of bacterial genetics before they take any upper division bacteriology coursework. Equally important, the subject matter cannot be adequately covered in the 15 lectures allotted to it within Bact. 526. In addition, a course in microbial genetics is considered by the American Society of Microbiology to be an essential component of a minimal core curriculum in microbiology.

In response to the issues raised above, I developed an outline for a 2-credit course and presented this proposal to the Department of Bacteriology. My proposal was also supported by the Chairs of the Departments of Genetics and Biochemistry. The Department reviewed its entire undergraduate program, and Bacteriology 370 is an integral part of this new curriculum. One primary objective in developing the new core curriculum was to provide a solid foundation in bacterial genetics sufficiently early in order to prepare students for Bact. 520, Bact 526 as well as other advanced courses offered by the departments of Bacteriology, Biochemistry and Genetics.

Bacteriology 370 covers the genetics of bacteria, their plasmids and bacteriophages. The topics covered include: historical perspective of genetic concepts, chemical composition and structure of DNA, fidelity of DNA replication, gene structure and function, transactions involving DNA at the molecular level, chromosomal and extrachromosomal inheritance, means of genetic transfer, levels of regulation of gene expression, and genetic engineering in vivo and in vitro. I seek to challenge students to think critically, and I stress the development of problem solving abilities rather than emphasizing the assimilation of facts.

My teaching at UW-Madison has been in undergraduate and graduate courses (Bact, 370, 526, 612 and 875). The goals of the courses I taught and my involvement in them are outlined briefly below:

1987-1988:

Teaching relief as planned in start-up agreement.

1988-1989:

Bact. 526 (Physiology of Microorganisms). Fifteen 50-minute lectures on Microbial Genetics (one credit of the three credit lecture course). Office hours: three hours weekly for the entire fall semester of 1988. Enrollment in this course was 54 students.

1989-1990:

Bact. 526 (Microbial Physiology). Fifteen 50-minute lectures on Microbial Genetics (1 credit of the three credit lecture course). Office hours: three hours weekly for the entire fall semester of 1989. Enrollment in this course was 57 students.

Bact. 875 (special topics: Procaryotic DNA Replication). One 1.5 hour session per week for the entire semester. The format was a student led critical review of 2-3 papers. I selected the readings for discussion and met with students for 2-3 hours to preview their presentation and answer questions derived from their supplementary reading. In consultation with student presenters, I prepared a short set of problems for the remaining students to discuss. This format allowed students to critically evaluate experimental design and data, it involved the students in a discussion of the validity of individual scientific models, and it provided the opportunity for students to review and appreciate the progress in understanding the mechanisms controlling DNA replication. Enrollment in this course was 10 students.

1990-1991:

Bact. 526 (Microbial Physiology). Fifteen 50-minute lectures on Microbial Genetics (1 credit of the three credit lecture course). Office hours: three hours weekly for the entire semester. Enrollment in this course was 68 students.

Bact. 731 (graduate student seminar): One 50-minute seminar weekly for the entire semester

1991-1992:

Bact. 370 (Bacterial Genetics): Thirty 50-minute lectures for the entire semester. In addition we offer TA led discussion sections twice every week. Enrollment in this course was 75 students.

1992-1993

Bact. 612 (Prokaryotic Molecular Genetics; team taught course). Ten 50-minute lectures and three discussion sections in four weeks.

The topics I taught included: structure of bacterial chromosomes, biochemistry and control of DNA replication, mechanisms of DNA repair. Enrollment in this course was 135 students.

Bact. 731 (Graduate student seminar): One 50-min seminar weekly for the entire semester.

1993-1994:

Bact. 370 (Bacterial Genetics): Thirty 50-minute lectures and fifteen 50-minutes discussion sections for the entire semester. Enrollment in this course was 95 students.

Bact 612 (Procaryotic Molecular Genetics): Eighteen 50-minute lectures and nine discussion sections.

The topics I taught included: structure of bacterial chromosomes, biochemistry and genetic control of DNA replication, transcription, repair, and recombination. Enrollment in this course was 147 students.

1994-1995:

Bact. 370 (Bacterial Genetics): Thirty 50-minutes lectures and fifteen 50-minutes discussion sections for the entire semester. Enrollment in this course was 104 students.

Bact. 612 (Procaryotic Molecular Genetics). Twenty 50-minute lectures and ten discussion sections.

While developing this course I kept in mind that the subject of molecular genetics is now far too advanced, large, and complex for much value to come from attempting to cover the material in an encyclopedia-like fashion or teaching the definitions of the relevant words in a dictionary-like approach. I have covered the principles and encouraged students to learn how to apply them. Thinking and learning to reason from the fundamentals require serious effort but, are more efficient and more rewarding than mere memorization.

The part of the course I taught contains the following four types of information:

1. The main part is the handout (allows students to listen to me rather than take notes during lectures).
2. "Suggested readings, experimental papers and reviews" in the Steenbok library
3. Problem sets (3x)
4. In-class quizzes (3x)

SERVICE

Departmental/ interdepartmental/University

1988- present, Undergraduate advising for Bacteriology Majors (~25 advisees).
1989-1990, Bacteriology Search Committee (1 faculty).
1991, Bacteriology Department Merit Committee.
1991, Chairman of Bacteriology Masters Program.
1991, Senator.
1991-1992, Bacteriology Department Ph.D. student admissions Committee.
1992, Bacteriology Department Curriculum Committee.
1993-1995, Chairman Bacteriology Department Curriculum Committee.
1995, Bacteriology Merit Committee, Chairman.
1997, Bacteriology Ph.D. student admissions Committee.
1998, Bacteriology Department Curriculum Committee.
1997- 98, CMB Coordinating Committee.
1999-2000, CMB Admissions Committee.
2000-2003, Awards Committee.
2001-present, UW Honorary Degrees.

PAST AND PRESENT COLLABORATORS

Dr. Ross B. Inman UW-Madison
Dr. Robert Wells (Texas A@M University, Huston)
Dr. Waclaw Szybalski UW-Madison
Dr. Richard Burgess- UW Oncology
Dr. Patricia McManus - UW Plant Pathology
Dr. Jo Handelsman - UW Plant Pathology
Dr. Kenn Rafa - UW Entomology
Dr. Grzegorz Wegrzyn -University of Gdansk, Poland
Dr. Izabella Wolska- University of Warsaw, Poland
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